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EXAMINER

PAUL, DISLER

ART UNIT

PAPER NUMBER

2615

NOTIFICATION DATE

DELIVERY MODE

09/19/2008

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/518,588

Applicant(s)

ANDERSEN, BJOERN KNUD

Examiner

DISLER PAUL

Art Unit

2615

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 September 2007.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 16-50 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 16-50 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/CDC)
Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 16-18, 21, 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greenberger (US 5,492,129).

Re claim 16, Greenberger disclose of the transducer for bio-acoustic signals, comprising: a transducer element having a front side and a rear side, the front side being adapted for establishing intimate contact with a surface of a body part receiving direct interior sound from the body (fig.1B wt (26a,24a)/with mic for contact with skin); said transducer element being mounted in a housing, and having a surface surrounding the front side of said transducer element, said transducer element and said surrounding surface being in intimate contact with the surface of said body part during use (fig. 1B wt (20a); col.6 line 40-50/all include in the housing), and wherein the rear side of the transducer element is loaded by acoustical network means which are in communication with the surrounding air, said loading creating an extinguishing relationship between airborne noise signals influencing the front and rear sides of the transducer

element, respectively (fig.1B wt (24a, 26a); fig.2A wt (12a); col.5 line 10-26; col.7 line 5-23)

While, Greenberger disclose of the transducer element with airborne noise and housing, but, Greenberger fail to disclose of the specific wherein the transducer element has an effective area that is less than 50% of the area of the surrounding surface of the housing. But, official notice is taken the concept of determining the effective area of the transducer ratio and most specifically wherein the area to being less than 50% of the area of surrounding surface of the housing is simply the inventor's preference. Thus, it would have been obvious for one of the ordinary skill in the art to have modify Greenberger with the determining the effective area of the transducer ratio and specifically wherein the area to being less than 50% of the area of surrounding surface of the housing for enabling the correct fitting of the transducer element within the surrounding housing.

Re claim 17, the transducer according to claim 16 with housing and transducer element, But, Greenberg fail to disclose of the area ratio of the housing and transducer element and specifically wherein the effective area of the transducer element fulfills the area ratio $0.50 \leq \frac{a_d}{a_h} \leq 0.001$, where a_d is the effective area and a_h is the area of the surrounding surface. But, official notice is taken the concept of determining the area ratio of the housing and transducer element and most specifically the area

ratio 0.50 less than equal to ad/ah greater or equal to 0.001 is simply the inventor's preference. Thus, it would have been obvious for one of the ordinary skill in the art to have modify Greenberger with the determining the determining the area ratio of the housing and transducer element for enabling the correct fitting of the transducer element within the surrounding housing.

Re claim 18, the transducer according to claim 16, wherein the effective area of the transducer element fulfills the area ratio 0.20.less or equal to ad/ah being greater or equal to 0.05, where ad is the effective area and ah is the area of the surrounding surface (see claim 17 rejection).

Re claim 21, the transducer according to claim 16, wherein the acoustical network means comprises a cavity which is indirectly influenced by airborne noise (fig.10; col.16 line 50-65/ (port with slit) as to be influenced by noise ambient). But, Greenberger fail to disclose of the cavity being in the housing. But, official notice is taken the concept of having a cavity in the housing is well known in the art, thus it would have been obvious for one of the ordinary skill in the art to have modify Greenberger with the cavity being in the housing for providing a pathway for ambient noise.

Re claim 23, the transducer according to claim 16, wherein the acoustical network means comprises a cavity and at least one port in the housing (see claim 21 rejection).

Re claim 24, the transducer according to claim 23, wherein the port is formed by a narrow slit (see claim 21 rejection).

3. Claims 19-20, 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greenberger (US 5,492,129) and Petroff et al. (US 6,925,191 B2).

Re claim 19, the transducer according to claim 16, But, Greenberger fail to disclose of the wherein the transducer element component and specifically the element is a compound diaphragm which produces an electrical output when subjected to bending. But, Petroff et al. disclose of a system wherein the transducer element is a compound diaphragm which produces an electrical output when subjected to bending (col.1 line 35-45; col.2 line 28-37) for purpose of having most efficient transducer and reproduce transient clearly. Thus, taking the combined teaching of Greenberger and Petroff et al. as a whole, it would have been obvious for one of the ordinary skill in the art to have modified Greenberger with the compound diaphragm which produces an electrical output when subjected to bending for purpose of having most efficient transducer and reproduce transient clearly.

Re claim 20, the transducer according to claim 16, But, Greenberger fail to disclose of the wherein the transducer element is a compound diaphragm. But, Petroff et al. disclose of a system wherein the transducer element is a compound diaphragm (col.1 line 35-45; col.2 line 28-37) for purpose of having most efficient transducer and reproduce transient clearly. Thus, taking the combined teaching of Greenberger and Petroff et al. as a whole, it would have been obvious for one of the ordinary skill in the art to have modified Greenberger with wherein the transducer element is a compound diaphragm for purpose of having most efficient transducer and reproduce transient clearly.

The combined teaching of Greenberger and Petroff et al. as a whole, Of the transducer which produces an electrical output when subjected to differential stretching of a front side with respect to a rear side of the diaphragm (col.7 line 8-15).

Re claim 22, the transducer according to claim 16, But, Greenberger fail to disclose of the wherein the transducer element is a compound diaphragm. But, Petroff et al. disclose of a system wherein the transducer element is a compound diaphragm (col.1 line 35-45; col.2 line 28-37) for purpose of having most efficient transducer and reproduce transient clearly. Thus, taking the combined teaching of Greenberger and Petroff et al. as a whole, it would have been obvious

for one of the ordinary skill in the art to have modified Greenberger with wherein the transducer element is a compound diaphragm for purpose of having most efficient transducer and reproduce transient clearly.

The combined teaching of Greenberger and Petroff et al. as a whole, fail to disclose of the wherein the acoustical network means comprises a cylindrical conduit having essentially the same diameter as the diaphragm. But, official notice is taken the concept of having the acoustical network means comprises a cylindrical conduit having essentially the same diameter as the diaphragm is simply the inventor's preference. Thus, it would have been obvious for one of the ordinary skill in the art to have modified the combined teaching of Greenberger and Petroff et al. as a whole, with the wherein the acoustical network means comprises a cylindrical conduit having essentially the same diameter as the diaphragm for better arrangement of the enclosing diaphragm.

4. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Greenberger (US 5,492,129) and Klein (US 6,160,897).

Re claim 25, the transducer according to claim 24 with the slit, but, Greenberger fail to disclose of the specific wherein the slit is made in a material that is not wetted by water. But, Klein disclosed of a system wherein the fabric is made of a material that is not wetted by

water (col.5 line 43-48) for purpose of protecting the transducer from rain or liquid. Thus, taking the combined teaching of Greenberger and Klein as a whole, it would have been obvious for one of the ordinary skill in the art at the time of the invention to have modified Greenberger with the fabric is made of a material that is not wetted by water for purpose of protecting the transducer from rain or liquid.

5. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Greenberger (US 5,492,129) and Fukumoto et al. (US 6,912,287 B1).

Re claim 26, the transducer according to claim 16, But, Greenberger fail to disclose of the wherein an elastic material capable of transmitting mechanical vibration is provided in sealing relationship with respect to the diaphragm in a manner sealing the diaphragm relative to the surface of a body part in use. But, Fukumoto et al. disclose of a system wherein an elastic material capable of transmitting mechanical vibration is provided in sealing relationship with respect to the diaphragm in a manner sealing the diaphragm relative to the surface of a body part in use (fig.1,3,4,6; col.11 line 22-27) for purpose of improving the attachment to the hand. Thus, taking the combined teaching of Greenberger and Fukumoto et al. as a whole, it would have been obvious for one of the ordinary skill in the art to have modified Greenberger with the elastic material capable of transmitting mechanical vibration is provided in sealing relationship with respect to the diaphragm in a manner sealing the diaphragm

relative to the surface of a body part in use for purpose of improving the attachment to the hand.

6. Claims 27, 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greenberger (US 5,492,129) and Greenberger (5,883,339).

Re claim 27, the transducer according to claim 16, but, Greenberger fail to disclose of the wherein the acoustical network means comprises a damping material. But, Greenberger (39) disclose of the acoustical network means comprises a damping material (col.4 line 26-40; col.7 line 1-12) for purpose of achieving vibration reduction through passive mechanical means. Thus, taking the combined teaching of Greenberger and Greenberger (39) as a whole, it would have been obvious for one of the ordinary skill in the art to have modified Greenberger with the acoustical network means comprises a damping material for purpose of achieving vibration reduction through passive mechanical means.

Re claim 29, the transducer according to claim 27, wherein the acoustical network means comprises a damping material. But, the combined teaching of Greenberger and Greenberger (39) as a whole, fail to disclose of wherein the damping material is used as a resistive element in a port. But, official notice is taken the concept of having a damping material is used as a resistive element in a port is simply the inventor's preference. Thus, it would have been obvious for one of

the ordinary skill in the art to have modified the combined teaching of Greenberger and Greenberger (39) as a whole, with the wherein having a damping material is used as a resistive element in a port for pathway in receiving the airborne noise signal.

7. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Greenberger (US 5,492,129) and Greenberger (5,883,339) and Petroff et al. (US 6,925,191 B2).

Re claim 28, the transducer according to claim 27, But, the combined teaching of Greenberger and Greenberger (39) as a whole, fail to disclose of wherein the transducer element is a compound diaphragm. But, Petroff et al. disclose of a system wherein the transducer element is a compound diaphragm (col.1 line 35-45; col.2 line 28-37) for purpose of having most efficient transducer and reproduce transient clearly. Thus, taking the combined teaching of Greenberger and Greenberger (39) Petroff et al. as a whole, it would have been obvious for one of the ordinary skill in the art to have modified Greenberger and Greenberger (39) as a whole, with the compound diaphragm for purpose of having most efficient transducer and reproduce transient clearly.

The combined teaching of Greenberger and Greenberger (39) Petroff et al. as a whole, fail to disclose of the specific wherein the acoustical network means comprises a cylindrical conduit having essentially the same diameter as the diaphragm. But, official notice

is taken the concept of the specific wherein the acoustical network means comprises a cylindrical conduit having essentially the same diameter as the diaphragm is simply the inventor's preference. Thus, it would have been obvious for one of the ordinary skill in the art to have modified Greenberger with the specific wherein the acoustical network means comprises a cylindrical conduit having essentially the same diameter as the diaphragm for enabling the correct fitting of the transducer element within the surrounding housing and wherein the cylindrical conduit is provided with a damping material (Petroff, col.1 line 35-45; col.2 line 28-37)

8. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Greenberger (US 5,492,129) and Greenberger (5,883,339) and Klein (US 6,160,897).

Re claim 30, the transducer according to claim 27 with the damping mater, But, the combined teaching of Greenberger and Greenberger (39) as a whole, fail to disclose of the wherein the material has water-repellent qualities. But, Klein disclosed of a system wherein the material has water-repellent qualities (col.5 line 43-48) for purpose of protecting the transducer form rain or liquid. Thus, taking the combined teaching of Greenberger and Greenberger (39) and Klein as a whole, it would have been obvious for one of the ordinary skill in the art at the time of the invention to have modified the combined teaching of Greenberger and Greenberger (39) as a whole, with the

material has water-repellent qualities for purpose of protecting the transducer form rain or liquid.

9. Claim 37-38, 41-42, 45-46, 48 are rejected under 35 U.S.C. 102(b) as being anticipated over Greenberger (US 5,492,129).

Re claim 37, Greenberger disclose of the transducer assembly for transducing bio-acoustic signals, comprising: a skin coupling surface comprising a transducer element and having a front side and a rear side(fig.1B wt (26a,24a)); a housing, the housing subject to ambient airborne noise and comprising a surface surrounding the front side of the transducer element, the transducer element and the surrounding surface of the housing situated to establish intimate coupling with a surface of a body part during use, the body part surface defining a source of the bio-acoustic signals fig. 1B wt (20a); col.6 line 40-50/all include in the housing); and an ambient noise suppression arrangement configured to suppress ambient airborne noise coupled to the rear side of the skin coupling surface and ambient airborne noise coupled to the front side of the skin coupling surface, the ambient noise suppression arrangement configured to upwardly shift a transducer assembly resonance notch beyond an upper frequency limit of a frequency range associated with particular bio-acoustic signals (fig.1B wt (24a, 26a); fig.2A wt (12a); col.5 line 10-26; col.7 line 5-23; col.11 line 5-20; ; col.10 line 20-40/filter freq may be move upwardly for maximum noise cancellation)

Re claim 38, the transducer assembly of claim 37, wherein the skin coupling surface comprises interfacing material disposed over at least the front side of the transducer element and configured to provide good acoustical coupling between the transducer element and the surface of the body part during use (fig.1A-B; with chest piece).

Re claim 41, the transducer assembly of claim 37, wherein the particular bio-acoustic signals are associated with body sounds selected from the group consisting of heart sounds and low frequency heart murmurs (fig.1A/for low frequency heart sound).

Re claim 42, the transducer assembly of claim 37 with body sound frequency (fig.1), but, Greenberger fail to disclose of the wherein the particular bio-acoustic signals are associated with body sounds selected from the group consisting of lung sounds and high frequency heart murmurs (fig.2; col.1 line 9-20; low-mid frequency sound).

RE claim 45, the transducer assembly of claim 37, wherein the ambient noise suppression arrangement comprises an acoustical network through which ambient noise is communicate from air surrounding the housing to the rear side of the transducer element, the acoustical network configured to increase ambient noise suppression within the frequency range associated with the particular bio-acoustic signals (fig.2A (26a); col.7 line 5-25).

Re claim 46, Greenberger disclose of the method of transducing bio-acoustic signals, comprising: providing a transducer assembly comprising a housing and a transducer element having a front side and a rear side, the housing comprising a surface surrounding the front side of the transducer element, the transducer element and the surrounding surface of the housing situated to establish intimate coupling with a surface of a body part during use, the body part surface defining a source of the bio-acoustic signals (see claim 37 rejection); communicating ambient noise through an opening in the housing and to the back side of the transducer element; receiving ambient noise at the front side of the transducer element when the housing establishes intimate coupling with the body part surface during use; and reducing ambient noise influencing the transducer element by upwardly shifting a transducer assembly resonance notch beyond an upper frequency limit of a frequency range associated with particular bio-acoustic signals (fig.1-2; col.11 line 5-20; ; col.10 line 20-40/filter freq may be move upwardly for maximum noise cancellation).

Re claim 48, the method of claim 46, wherein communicating ambient noise through the housing opening comprises communicating the ambient noise through an acoustical network (fig.2/network for ambient sound cancellation).

10. Claim 39-40, 42, 49-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greenberger (US 5,492,129).

Re claim 39, the transducer assembly of claim 37 with the upper frequency, but, Greenberger fail to disclose of the wherein the upper frequency limit is a frequency greater than 1000 Hz. But, official notice is taken the concept of having the frequency limit being the specific of frequency greater than 1000 Hz is simply the inventor's preference, thus it would have been obvious for one of the ordinary skill in the art to have modified Greenberger with the specific wherein the frequency limit being the specific of frequency greater than 1000 Hz for providing good sound cancellation.

Re claim 40, the transducer assembly of claim 37, wherein the upper frequency limit is a frequency less than 1000 Hz (see claim 39 rejection).

Re claim 42, the transducer assembly of claim 37 with body sound frequency (fig.1), but, Greenberger fail to disclose of the wherein the particular bio-acoustic signals are associated with body sounds selected from the group consisting of lung sounds and high frequency heart murmurs (fig.2; col.1 line 9-20; low-mid frequency sound).

Re claims 49-50 have been analyzed and rejected with respect to claims 39-40 respectively.

Allowable Subject Matter

11. Claims 31-36 are allowed.
12. Claims 47, 43-44 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Re claim 31, none of the prior art of record disclose of the ambient noise suppression arrangement comprising a selected area ratio of an effective area of the transducer element (ad) relative to an area of the surrounding surface of the housing (ah), wherein the effective area of the transducer element (ad) is less than 50% of the surrounding surface area (ah) and the selected area ratio provides for increased ambient noise suppression within a frequency range associated with the bio-acoustic signals.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DISLER PAUL whose telephone number is (571)270-1187. The examiner can normally be reached on 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chin Vivian can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. P./
Examiner, Art Unit 2615

/Vivian Chin/
Supervisory Patent Examiner, Art Unit 2615